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I claim:

1. (Canceled).

2. (Previously presented) A chelating composition in combination with fertilizer or fertilizer additives, said chelating composition comprising a modified iminodisuccinic acid, or a salt thereof, having one or more of the following formulas:

(a)

$$\begin{matrix} & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & &$$

(b)

(c)

(d)

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(e)

where X may be H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal;

where n may be 1 to 10; and

where R may be a Lewis base capable of donating a nonbonded pair of electrons.

3. (Previously presented) A fertilizer comprising a chelating composition for application to soils, seeds or plants, said chelating composition comprising a modified iminodisuccinic acid, or a salt thereof, having one or more of the following formulas:

(a)

$$\begin{matrix} & & & & & \\ & & & & \\ & & & & \\ X\text{-O-OC-C--N--C-CO-O-X} \\ & & & & \\ & & &$$

(b)

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(c)

(d)

(e)

where X may be H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal;

where n may be 1 to 10; and

where R may be a Lewis base capable of donating a nonbonded pair of electrons.

- 4. (Canceled).
- 5. (Canceled).
- 6. (Canceled).
- 7. (Canceled).
- 8. (Canceled).
- 9. (Canceled).
- 10. (Canceled).

11. (Canceled).

12. (Currently Amended) A compound used as a fertilizer additive comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal; n is 1 to 10, and R is a Lewis base capable of donating a nonbonded pair of electrons, wherein said compound is synthesized by a synthesis comprising the steps of:

- (a) adding an acid anhydride or lactone to a first polyfunctional amine, and allowing same to react to form a N-polyfunctional acid common name amide; and
- (b) adding water, Me(OH), alkali metal hydroxide, and a second polyfunctional amine to said N- polyfunctional acid common name amide and allowing same to react to form an imino di N- polyfunctional acid common name amide.
- 13. (Currently amended) A compound used as a chelating agent in a concentration of $1/10^a$ to 1 part, where a is less then 10, or 1.0 x 10^{-9} Molar to 3Molar, wherein

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said compound comprises at least one poly functional substitution on iminodisuccinic acid having the following formula:

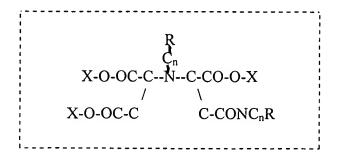
where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal; n is 1 to 10, and R is a Lewis base capable of donating a nonbonded pair of electrons, and wherein said compound is synthesized by a synthesis comprising the steps of:

- (a) adding an acid anhydride or lactone to a first polyfunctional amine, and allowing
 - same to react to form a N-polyfunctional acid common name amide; and
- (b) adding water, Me(OH), alkali metal hydroxide, and a second polyfunctional amine to said N-polyfunctional acid common name amide and allowing same to react to form an imino di N- polyfunctional acid common name amide.
- 14. (Currently amended) A compound used for application to soils, seed, or plants, wherein said compound comprises at least one poly functional substitution on iminodisuccinic acid having the following formula:

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where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal; n is 1 to 10, and R is a Lewis base capable of donating a nonbonded pair of electrons, and wherein said compound is synthesized by a synthesis comprising the steps of:

- (a) adding an acid anhydride or lactone to a first polyfunctional amine, and allowing same to react to form a N-polyfunctional acid common name amide; and
- (b) adding water, Me(OH), alkali metal hydroxide, and a second polyfunctional amine to said N- polyfunctional acid common name amide and allowing same to react to form an imino di N- polyfunctional acid common name amide.
- 15. (Canceled).
- 16. (Currently amended) A compound used as a fertilizer additive comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:



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where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts, n is 1 to 10, R is a lewis base capable of donating a nonbonded pair of electrons, and Me is selected from the alkali metals, and wherein the synthesis of said compound comprises the steps of:

- (a) adding an acid anhydride or lactone to a first polyfunctional amine, and allowing same to react to form a N- polyfunctional acid common name amide; and
- (b) adding to said N-polyfunctional acid common name amide, water, a second polyfunctional amine, an acid anhydride or lactone, an Me(OH), alkali metal hydroxide, and allowing same to react to form said compound.
- 17. (Currently amended) A compound used as a chelating agent in a concentration of $1/10^a$ to 1 part, where a is less then 10, or 1.0×10^{-9} Molar to 3Molar, said compound comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts, n is.1 to 10, R is a lewis base capable of donating a

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nonbonded pair of electrons, and Me is selected from the alkali metals, wherein the synthesis of said compound comprises the steps of:

- (a) adding an acid anhydride or lactone to a first polyfunctional amine, and allowing same to react to form a N- polyfunctional acid common name amide; and
- (b) adding to said N- polyfunctional acid common name amide, water, a second polyfunctional amine, an acid anhydride or lactone, an Me(OH), alkali metal hydroxide, and allowing same to react to form said compound.
- 18. (Currently amended) A compound used for application to soils, seed, or plants, said compound comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts, n is.1 to 10, R is a lewis base capable of donating a nonbonded pair of electrons, and Me is selected from the alkali metals, wherein the synthesis of said compound comprises the steps of:

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(a) adding an acid anhydride or lactone to a first polyfunctional amine, and allowing same to react to form a N- polyfunctional acid common name amide; and

- (b) adding to said N- polyfunctional acid common name amide, water, a second polyfunctional amine, an acid anhydride or lactone, an <u>Me(OH)</u>, <u>alkali</u> metal hydroxide, and allowing same to react to form said compound.
- 19. (Canceled).
- 20. (Currently amended) A fertilizer additive comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts;, where n is 1 to 10; where R is a Lewis base capable of donating a nonbonded pair of electrons, wherein the synthesis of said fertilizer additive comprises the steps of:

adding maleic anhydride or malic acid to Me(OH) alkali metal hydroxide + polyfunctional amine + water, and allowing same to react to form the N, N-disuccinicamino(:functional group).

21. (Currently amended) A chelating agent in a concentration of 1/10^a to 1 part, where a is less than 10, or, or 1.0 x 10⁻⁹Molar to 3 Molar, wherein said chelating agent comprises at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts; where n is 1 to 10; where R is a Lewis base capable of donating a nonbonded pair of electrons, and wherein the synthesis of said chelating agent comprises the steps of: adding maleic anhydride or malic acid to Me(OH) alkali metal hydroxide + polyfunctional amine + water, and allowing same to react to form the N, N-disuccinicamino(:functional group).

22. (Currently amended) A compound used for application to soils, seed, or plants comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

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where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts;, where n is 1 to 10; where R is a Lewis base capable of donating a nonbonded pair of electrons, wherein the synthesis of said compound comprises the steps of: adding maleic anhydride or malic acid to Me(OH) alkali metal hydroxide + polyfunctional amine + water, and allowing same to react to form the N, N-disuccinicamino(:functional group).

- 23. (Canceled).
- 24. (Currently amended) A fertilizer additive comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts; where n is 1 to 10, where R is a Lewis base capable of donating a nonbonded pair of electrons; wherein the synthesis of said fertilizer additive comprises the steps of:

(a) adding acid anhydride or lactone to a first polyfunctional amine and allowing same to react to form a N- polyfunctional acid common name amide; and

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(b) adding to said N- polyfunctional acid common name amide, water + ammonia + Me(OH), alkali metal hydroxide, and allowing same to react to form an N,N- amino polyfunctional acid common name amide.

25. (Currently amended) A chelating agent in a concentration of 1/10^a to 1 part, where a is less then 10, or 1.0 x 10⁻⁹ Molar to 3 Molar, said chelating agent comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts; where n is 1 to 10, where R is a Lewis base capable of donating a nonbonded pair of electrons; and wherein the synthesis of said chelating agent comprises the steps of:

- (a) adding acid anhydride or lactone to a first polyfunctional amine and allowing same to react to form a N- polyfunctional acid common name amide; and
- (b) adding to said N- polyfunctional acid common name amide, water + ammonia + Me(OH), alkali metal hydroxide, and allowing same to react to form an N,N-amino polyfunctional acid common name amide.

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26. (Currently amended) A compound used for application to soils, seed, or plants comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salts; where n is 1 to 10, where R is a Lewis base capable of donating a nonbonded pair of electrons; and wherein the synthesis of said compound comprises the steps of: (a) adding acid anhydride or lactone to a first polyfunctional amine and allowing same to react to form a N- polyfunctional acid common name amide; and (b) adding to said N- polyfunctional acid common name amide, water + ammonia + Me(OH), alkali metal hydroxide, and allowing same to react to form an N,N- amino polyfunctional acid common name amide.

- 27. (Canceled).
- 28. (Previously presented) A fertilizer additive[s] comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

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where X may be H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal; where n may be 1 to 10; where R may be a lewis base capable of donating a nonbonded pair of electrons; wherein the synthesis of said fertilizer additive comprises the steps of:

- (a) adding an acid anhydride or lactone to a first polyfunctional amine and allowing same to react to form an N- polyfunctional acid common name amide;
- (b) adding to said N- polyfunctional acid common name amide, water, ammonia + maleic anhydride or maleic acid (salt) and allowing same to react to form said fertilizer additive.
- 29. (Previously presented) A chelating agent in a concentration of 1/10^a to 1part, where a is less then 10, or 1.0 x 10⁻⁹ Molar to 3 Molar, said chelating agent comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X may be H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal; where n may be 1 to 10; where R may be a lewis base capable of donating a nonbonded pair of electrons; wherein the synthesis of said chelating agent comprises the steps of:

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(a) adding an acid anhydride or lactone to a first polyfunctional amine and allowing same to react to form an N- polyfunctional acid common name amide;

(b) adding to said N- polyfunctional acid common name amide, water, ammonia +

maleic anhydride or maleic acid (salt) and allowing same to react to form said chelating agent.

30. (Previously presented) A compound used for application to soils, seed, or plants, said compound comprising at least one poly functional substitution on iminodisuccinic acid having the following formula:

where X may be H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal; where n may be 1 to 10; where R may be a lewis base capable of donating a nonbonded pair of electrons; wherein the synthesis of said compound comprises the steps of:

- (a) adding an acid anhydride or lactone to a first polyfunctional amine and allowing same to react to form an N- polyfunctional acid common name amide;
- (b) adding to said N- polyfunctional acid common name amide, water, ammonia + maleic anhydride or maleic acid (salt) and allowing same to react to form said compound.

- 31. (Canceled).
- 32. (Previously presented) A fertilizer additive comprising iminodisuccinic acid having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salt.

- 33. (Canceled).
- 34. (Previously presented) An iminodisuccinic acid used for application to soils, seed, or plants having the following formula:

where X is H, alkali, alkaline earth, ammonium-substituted radical, ammonium or transition metal salt.

35. (Previously presented) Nonphosphate fertilizer additives comprising iminodisuccinates.